DOCUMENT RESUME

ED 213 405 IR 010 032

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TITLE The COM Catalog: A Plan for Implementation.
PUB DATE 7 Aug 81
NOTE 34p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Libraries; Cataloging; *Computer Output Microfilm; *Cost Effectiveness; Decision Making; Higher Education; *Library Catalogs; *Library Equipment; Library Instruction; *Library Planning; *Microforms; Objectives; Visual Aids
IDENTIFIERS Kent State University OH

ABSTRACT

A brief statement on the advantages of using computer output microform (COM) for library catalogs introduces a general plan for implementing such a catalog in an academic library. The factors involved and types of decisions that must be made are discussed for each of eight steps in the process: determining the objectives of the catalog; choosing the format; data elements to be used; the visual presentation of the data; choosing a microfiche reader; determining the number of readers needed; choosing a service bureau; and user instruction. A formula for determining the monthly cost of maintaining the COM catalog is appended. The more than 60 references provided are listed in subject categories. (RAA)

THE COM CATALOG: A PLAN FOR IMPLEMENTATION

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AUGUST 7, 1981

INTRODUCTION

"The new trend towards initially expensive - but in the long run cost-effective - microform catalogs could signal the approaching extinction of the bulky, hard copy book catalogs."[1] This trend has come about through the following advantages of computer-output-microform (COM):

1. The programming required for converting from paper printout to COM is relatively simple requiring only a few hours.
2. The savings in time required to produce a COM tape as opposed a paper printout is generally in the 75-80 percent range.
3. The cost of the original copies of the report are approximately 50 percent less than for the same report on paper.
4. The savings on duplicate copies are even more dramatic. One microfiche, 207 pages at 42x, can be duplicated for about 10 cents.
5. The resulting reports occupy approximately 2 percent of the space occupied by the same print report. The 6000-page public catalog ... can easily be carried around in a pocket.
6. Access time is considerably reduced because of the ease of handling and scanning large amounts of data.
7. Distribution is considerably easier and considerably less costly if reports are to be mailed.
8. Turn-around time for COM reports is considerably reduced when compared to printing.[2]

With these advantages in mind, it is important to understand the process of implementing a COM catalog. The objective of this study is to develop a plan for the implementation of a COM catalog. The plan will be developed with attention to the problems of an academic library.

The first step of the plan is to develop objectives for the COM catalog. The next step is to choose the format.

Then data elements to be included in each entry are chosen, followed by the visual presentation of the entries. Choosing a reader will be explained, as well as determining the appropriate number of readers. Choosing a service bureau will be discussed, as will user instruction. A formula for determining the monthly cost of maintaining the COM catalog will be included as Appendix A.

DETERMINING OBJECTIVES

For the COM catalog to be effective, the first step in the process is to determine the objectives of the catalog. Possible objectives include providing bibliographic information, providing subject access, providing holdings information, and user comfort. Once the objectives are determined, a system should be designed to meet those objectives.[3]

It is possible that a hybrid system will be best suited to meet the objectives. For instance, the Tucson Public Library has a COM catalog for the bibliographic description. Holdings and location information, including circulation records, which are constantly changing, are provided in an on-line system with brief entries so the information is always current.[4]

Frequency of updating and cumulation is also based upon the objectives. If one of the objectives is ease of access to information, the catalog should be cumulated frequently because it has been shown that people don't generally use supplements; instead they will look up only one entry and then stop.[5] If currency of information is an objective, then the catalog should be updated at least every two weeks, which is the average time it takes for OCLC cards to be received and filed.

CHOOSING THE FORMAT

It is necessary to choose between microfiche and microfilm for the format of the catalog. The advantages of microfilm are that there are less units to handle, and the file sequence integrity is maintained because the user can't misfile an item.[6] In addition, cassettes "are much less vulnerable than microfiche to undetected vandalism or loss."[7] The disadvantages are that film is difficult to use if rapid reference to images on several reels is required. In addition, mounting and rewinding the film can be inconvenient or even an insurmountable obstacle for the user.[8] The latter problem can be overcome by using a longer roll of film that stays in the machine or by using cassettes which don't require threading.[9]

Among the advantages of microfiche are that "fiche readers are a good deal cheaper than motorized film readers, and the user tends to be able to cope with the not too demanding task of putting a fiche into a reader and refiling it when he is finished."[10] "Microfiche equipment is usually only a fraction of the cost of roll-film equipment, and fiche are inexpensive to produce, reproduce en masse, and distribute."[11] This factor leads to the possibility of distribution to all academic departments and dormitories.[12] "If an individual fiche is lost, it is more easily replaced than an entire reel of film. Disadvantages of fiche include loss ... and misfiling in multi-fiche sets."[13]

DATA ELEMENTS

Many decisions will need to be made concerning which data elements should be included in a bibliographic entry. A choice must be made about the completeness of the bibliographic record. Short records save space, as well as "make it possible for the user to scan the catalog more efficiently."[14] Meyer and Juergens have found "that a brief entry would be satisfactory, provided that a full bibliographic entry is available somewhere in the catalog for each title."[15] A factor to consider in some libraries is that users "may even be confused by the display of full records."[16] However, Western Kentucky University Library Services chose to provide "all information contained in the traditional catalog."[17] Some questions may be helpful in deciding what bibliographic information to include:

> 1. Under which access point is it <u>essential</u> that the user be provided with complete bibliographical information regarding the item listed?
> 2. What are the data elements in the record which will provide the user with sufficient information to identify the work listed and to enable him to decide whether or not he needs the item?
> 3. To what extent will users need to obtain full bibliographical information for a listed item? How seriously will users be inconvenienced by having to refer from an access point under which limited data are shown to one under which the complete record is displayed?[18]

A few studies have been done to determine what elements should be included if a shortened record is determined to be suitable. Chwe found that the call number was indispensable.

Additional items were rated "the most useful and necessary ones in the order of their appearance here: heading (author's name), title, date of publication, edition statement, tracing, publisher, author statement (in the body of the entry), notes, and place of publication."[19] A study of catalog use at the University of Michigan General Library revealed that 84% "would have been successful with a hypothetical five-item computer catalog" consisting of author, title, subject headings, call number, and date of publication. Over 90% would have been successful if a contents note would have been added to the items in the catalog.[20] Atherton reports that "title entries are of special importance, with each word accessible as a separate alphabetic entry with suitable provision for entry by means of singular/plural and other types of word-form variations, as well as synonyms" would be much more useful than the present structure of the catalog.[21] UT-Dallas has chosen to provide different size entries in its various catalogs. "The author catalog contains very brief entries which consist of author, title statement, date of publication, and call number... The title catalog contains full entries which show the complete bibliographic record arranged in single paragraph style ... The more compact format permits more entries to be displayed on a page, an offsetting user benefit ... The subject entry consists of author, title, edition, date of publication, subject tracings, and call number ... The shelflist contains complete records which are arranged by call number." These

records include MARC tags to aid in tracking down problems.[22]

Several other questions must be considered about entries in the catalog:

> 1. Should materials other than books be included, such as serials; microforms; nonprint materials...?
> 2. If the items to be presented comprise holdings in two or more physically separate buildings or units of a library, should the ... catalog reflect location of items?
> 3. Should the catalog include only current materials, that is, items added or published after a certain date?...
> 4. Should the catalog include only retrospective materials?
> 5. Should the catalog include both current and retrospective items?
> 6. If the catalog is to include materials currently added, what provision is to be made for updating (supplements and cumulations)?[23]

VISUAL PRESENTATION

Decisions will have to be made concerning the visual presentation of the data. If microfilm is chosen as the format, one will have to choose between comic mode (a method of image placement in which the text of the document is parallel to the edges of the film)[24] or cine mode (the text of the document is perpendicular to the edges of the film).[25] One will have to decide on what type of indexing will be provided, if any. Choices range from the index calibration at the side of the reader in the ROM 4[26] to the computer-produced index in the film which is readable while the film is moving that is found in the Strobe/Search 100 chosen by the National Library of Medicine.[27]

The basic options for indexing of microfiche include:

1. Eye-readable characters at the top of each fiche and/or bottom of each column.
2. Column and row indexes which indicate the location of specific pages in a given fiche.[28]
3. Edge-notched coding.

Wassom has found that the use of the second option "not only accelerates the search process but also gives the user an immediate visual scan of other subject heading possibilities, a strategy not easily accomplished using a card catalog."[29] Reynolds recommends emphasizing headings and other important elements by use of capitalization, bold type and positioning. She discourages the use of mixed character sizes because of legibility considerations.[30]

Such headings could include column headings printed between entries in a single column; guide words, single words or short phrases at the top of each frame; section headings printed at the beginning of a section indicating the purpose of the section; and running headings which appear at the top of each fiche.[31] The number of columns per frame must also be decided upon. "The three-column format may make a 22 percent better use of space."[32] However, a study at UT-Dallas revealed that a 65 percent majority preferred two columns.[33]

CHOOSING A READER

There are many factors to consider when choosing a reader. It should be easy to maintain, because parts such as light bulbs will have to be replaced.[34] It should be sturdy, so it will hold up to heavy use.[35] The image quality of the reader should also be considered. A handbook published by the Council on Library Resources[36] "includes a packet of specially-prepared microfiche ... which can be used to assess the sharpness and evenness of a screen image from center to edges and corners."[37] Magnification is an important consideration when choosing a reader. COM images are designed for legibility so they can "be usefully displayed at about three quarters of original size ... Small type faces or detailed graphics can be overmagnified ... an important advantage that minimized eye fatigue and facilitated acceptance."[38] Readers with dual magnification can meet both these functions. A captive-lens approach is recommended for two reasons: "1) focus is maintained as the magnification is changed; and 2) captive lenses cannot easily be stolen."[39] If the catalog is small enough to fit on two to four fiche, one should consider a reader with a carrier capable of accepting two or four fiche at once. This capability would eliminate "the possibility that a user will have to change fiche to view a particular section of the catalog."[40] Lighting in the area where the readers

will be placed also affects the choice. There will probably be more glare on front-projection readers "located in a brightly lit area formerly devoted to a card catalog."[41] However, some of "the adverse effect of ambient light can be minimized with a hood."[42] There are several other factors which will affect user reaction. The focus should be easy to maintain. Screen illumination should be uniform. "Small areas of obviously greater brightness are undesirable" for user comfort.[43] The image should be viewable other than in the direct line of vision in order to accommodate note-taking or other work habits. If the screen angle is flexible, it is easier to see for people wearing eyeglasses or contact lenses.[44] Finally, the controls should be accessible to both right- and left-handers.[45]

If microfilm is chosen as the medium, the factors to consider are somewhat different. If the catalog takes up several reels of film, then ease of loading is a major factor. Cassette loading is recommended for ease and quickness of removing and inserting the different rolls.[46] Westminster City Libraries preferred a hand-operated model to a motorized one so "that the least mechanically-minded person ... could walk up to it and work it without difficulty."[47] However, the National Library of Medicine preferred a motorized reader that provides high-speed movement of film.[48]

After deciding which features are important, it is time to start considering different readers. Information

about readers that have been on the market for awhile is available in the Auerbach Guide to Microform Readers and Reader-Printers.[49] More recent information can be located in Auerbach Microform Reports[50] and in the March 1979 and March 1980 issues of Library Technology Reports.[51,52]

DETERMINING THE NUMBER OF READERS

An adequate number of readers is necessary to avoid long lines waiting to use the catalog. However, an overabundance of readers could prove to be an unnecessary expense. Knox and Miller have developed a method for determining the number of public computer terminals needed for an online catalog. "The technique and procedures used in the study are applicable in estimating the number of microform readers for a COM catalog."[53] Queuing theory, a mathematical technique, was used in determining the number. The formula considers such variables as the rate of patron arrivals and the average waiting time.[54] This method is recommended for determining the number of readers to purchase.

CHOOSING A SERVICE BUREAU

Libraries in a university setting will probably "have to rely on campus computer facilities for support. Therefore, the cooperation of campus computer centers will become crucial."[55] In this case, one must obtain a firm commitment from the computer center before going ahead with the project. An additional factor to consider in this case is that it will probably take longer than anticipated for the computer center to develop the appropriate software to produce the catalog because of lack of understanding of the library's needs.[56]

For most libraries, a service bureau is chosen to produce the COM catalog because of the variety of services and equipment available. "In selecting a COM service bureau, libraries should consider the availability of suitable recording and duplicating equipment, the range of services offerred, assurance of quality control over both master and duplicate microforms, reasonable cost, and a record of satisfactory performance, preferably in similar applications."[57] The latter can be determined by contacting current clients of the bureau.[58] Quality can be determined by having sample fiche run from your computer tape, which should then be carefully examined.[59]

Other factors to be considered when selecting a service bureau include turnaround time, "the availability

of back-up recorders, the level of software support provided to customers during the crucial initial stage of COM production, and staff expertise in both data processing and micrographics. A tour of the service bureau's facilities prior to conclusion of negotiations is recommended."[60] If you are required to sign a contract agreeing to a minimum number of fiche over a certain period, be careful that the number is a realistic figure for your library.[61]

It is not necessary to be limited to only one service bureau. The New York Public Library has used up to five service bureaus at one time. In this way, they have been able to keep costs down while receiving all the services needed.[62] One way to locate potential service bureaus is through the Microfilm Source Book.[63]

USER INSTRUCTION

A user instruction program is vital to the acceptance of a COM catalog. The University of Toronto Library created a teaching team which completed the following steps: ascertained the catalog needs of staff and users; determined how the COM catalog would meet those needs; planned promotional campaigns aimed at reassuring staff and users; designed instructional materials to teach operation of the readers, searching and interpreting entries; evaluated the COM catalog, the promotional campaigns, and the instructional materials to determine if the needs were being met; and suggested improvement and redesigned materials when necessary.[64] They determined that the best selling point to users was that it was easy to use.[65] However, the staff needed reassurance about such fears as the work patterns would be sericusly disrupted, the automatic record-handling system might not be reliable, and they would be replaced by computers. Reassurance came when a sample catalog was run with 30,000 entries that the staff could browse, then comment on. A newsletter which went to the staff every two weeks and explained the developments and problems helped them accept the reality of the COM catalog.[66] A flip chart that was kept beside each reader explained how to use the reader, how to search the catalog, how to interpret the entries, and a directory for the campus libraries

arranged by the codes used in the catalog.[67] The New York State Library found that "such simple matters as ... instructional and directional aids, and labeling fiche readers with user instructions would have helped a great deal."[68]

CONCLUSION

A method has been developed for implementing a COM catalog. The procedure begins with developing objectives, then goes on to choosing the format, the data elements to be included and the visual presentation of the entries. Choosing a reader is discussed, as well as determining the number of readers and choosing a service bureau. A formula for determining the monthly cost of maintaining the COM catalog will be included as Appendix A.

NOTES

[1]"More Libraries Switch to COM Catalogs," Library Journal 102 (March 1977):672.

[2]Philip Schwary, "Computer Output Microfilm: Stout Uses a New Library Tool," Wisconsin Library Bulletin 72 (May 1976):125-26.

[3]Douglas J. Greenwold, "System Design Principles," Journal of Micrographics 11 (September 1977):39.

[4]Kenneth J. Bierman, "Multimedia Catalog: COM and Online," Journal of Library Automation 14 (June 1981):110.

[5]Pauline Atherton, "Catalog Users' Access from the Researcher's Viewpoint: Past and Present Research Which Could Affect Library Catalog Design," in Closing the Catalog: Proceedings of the 1978 and 1979 Library and Information Technology Association Institutes, ed. D. Kaye Gapen and Bonnie Juergens (Phoenix: Oryx Press, 1980), p. 107.

[6]William Saffady, Computer-Output Microfilm: Its Library Applications (Chicago: American Library Association, 1978), p. 96.

[7]Jill C. LeCroissette, "Microfilm Catalogs in a British Public Library System," in Microforms and Library Catalogs: A Reader, ed. Albert J. Diaz (Westport, CT: Microform Review Inc., 1977), p. 263.

[8]Saffady, Computer-Output Microfilm, p. 97.

[9]Ibid., p. 99.

[10]Samuel Memberg, "Library COM Applications," in Microforms and Library Catalogs: A Reader, ed. Albert J. Diaz (Westport, CT: Microform Review Inc., 1977), p. 195.

[11]James R. Dwyer, "Comments and Complaints on COM: Users Look at What Works and What Doesn't - and Why," ASIS Bulletin 7 (October 1980):20.

[12]Schwary, "Computer Output Microfilm," p. 130.

[13]Dwyer, "Comments," p. 20.

[14]Ibid., p. 21.

[15]Richard W. Meyer and Bonnie Juergens, "Computer Output Microfiche Catalogs: Some Practical Considerations," Journal of Micrographics 11 (November 1977):93.

[16]Basil Stuart-Stubbs, "Applications and Findings," in Microforms and Library Catalogs: A Reader, ed. Albert J. Diaz (Westport, CT: Microform Review, Inc., 1977), p. 157.

[17]Earl E. Wassom and Richard A. Jones, "Bibliographic Access to Full Descriptive Catalcging with COM," Journal of Library Automation 11 (March 1978):50.

[18]American Library Association. Resources and Technical Services Division. Book Catalogs Committee, Guidelines for Book Catalogs (Chicago: American Library Association, 1977), p. 21.

[19]Steven Seokho Chwe, "A Study of Data Elements for the COM Catalog," Journal of Library Automation 12 (March 1979):97.

[20]Richard P. Palmer, Computerizing the Card Catalog in the University Library: A Survey of User Requirements (Littleton, CO: Libraries Unlimited, 1972), p. 91-92.

[21]Atherton, "Catalog Users' Access," p. 107.

[22]Richard W. Meyer and John F. Knapp, "COM Catalog Based on OCLC Records," in Microforms and Library Catalogs: A Reader, ed. Albert J. Diaz (Westport, CT: Microform Review Inc., 1977), p. 270.

[23]American Library Association. Resources and Technical Services Division. Book Catalogs Committee, Guidelines, p. 5-6.

[24]William Saffady, Micrographics (Littleton, CO: Libraries Unlimited, 1978), p. 213.

[25]Ibid.

[26]"ID Introduces ROM 4," ROM Newsletter 4 (January 1980):3.

[27]"NLM Converts to High-Speed Access Microform Catalog," Information Retrieval & Library Automation 16 (May 1981):1.

[28]Robert M. Hayes, "On-Line Microfiche Catalogs: Report of a Demonstration Project," Journal of Micrographics 13 (March 1980):24.

[29]Wassom, "Bibliographic Access," p. 50.

[30]Linda Reynolds, Visual Presentation of Information in COM Library Catalogues: A Survey (London: British Library, Research and Development Department, 1979)

[31]American Library Association. Resources and Technical Services Division. Book Catalogs Committee, Guidelines, p. 24.

[32]Meyer, "Computer Output Microfiche," p. 93.

[33]Ibid.

[34]Saffady, Computer-Output Microfilm, p. 118.

[35]Katharine Gaines, "Undertaking a Subject Catalog in Microfiche," in Microforms and Library Catalogs: A Reader, ed. Albert J. Diaz (Westport, CT: Microform Review Inc., 1977), 39.

[36]William R. Hawken, Evaluating Microfiche Readers: A Handbook for Librarians (Washington, D.C.: Council on Library Resources, 1975)

[37]Saffady, Computer-Output Microfilm, p. 116.

[38]Ibid., p. 121.

[39]Ibid., p. 122.

[40]Ibid., p. 124.

[41]Ibid., p. 111.

[42]Ibid.

[43]Ibid., p. 125.

[45]Ibid., p. 128.

[46]Graham Larkworthy and Cyril G. Brown, "Library Catalogues on Microfilm," in Microforms and Library Catalogs: A Reader, ed. Albert J. Diaz (Westport, CT: Microform Review Inc., 1977), p. 191.

[47]Ibid.

[48]"NLM Converts," p. 1.

[49]Auerbach Guide to Microform Readers and Reader-Printers (Philadelphia: Auerbach Publishers, 1975)

[50]Auerbach Microform Reports, 1972-

[51]National Reprographic Centre for Documentation, "Microfiche Reader-Printers," Library Technology Reports 15 (March 1979):165-213.

[52]Howard S. White, "Microfiche Readers," Library Technology Reports 16 (March 1980):123-220.

[53]A. Whitney Knox and Bruce A. Miller, "Predicting the Number of Public Computer Terminals Needed for an On-Line Catalog: A Queuing Theory Approach," Library Research 2 (Spring 1980)95.

[54]Ibid., p. 100.

[55]John G. Lorenz, "Closing the Catalog: ARL's View," in Closing the Catalog: Proceedings of the 1978 and 1979 Library and Information Technology Association Institutes, ed. D. Kaye Gapen and Bonnie Juergens (Phoenix: Oryx Press, 1980), p. 142.

[56]Interview with David Buxton, University of Virginia Library, Charlottesville, Virginia, 3 July 1981.

[57]Saffady, Computer-Output Microfilm, p. 61.

[58]David D. Truax, "COM Service Bureaus: Selection Guidelines," Journal of Micrographics 13 (May 1980):21.

[59]Mary Rogerson, "Choosing a COM Bureau," Australian Library Journal 27 (September 1978):254.

[60]Saffady, Computer-Output Microfilm, p. 61-62.

[61]Rogerson, "Choosing," p. 254.

[62]Memberg, "Library COM Applications," p. 199.

[63]Microfilm Source Book 1972-

[64]Carolyn K. Murray, "Teaching the COM Microcatalog: A Discussion of How the University of Toronto Library Educated Its Patrons and Staff to Effectively Use the COM Microcatalog," RQ 19 (Fall 1979):53-54.

[65]Ibid., p. 56.

[66]Ibid., p. 55.

[67]Ibid., p. 56.

[68]Peter J. Paulson, "Closing the Card Catalog: The New York Experience," in Closing the Catalog: Proceedings of the 1978 and 1979 Library and Information Technology Association Institutes, ed. D. Kaye Gapen and Bonnie Juergens (Phoenix: Oryx Press, 1980), p. 50.

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APPENDIX A

COST

Before undertaking a project to convert to COM, one should be aware of the costs involved so that adequate funds will be available for the maintenance and updating of the system. King discusses a methodology for determining costs based on various cumulation and consolidation frequencies, but the model was not available for other libraries to use.[1] Saffady presents the following formula for determining the monthly costs of a COM catalog:

$$(T + (LxC) + (DxF)) \times U + \frac{(RxN)}{A} + M$$

Where:

- T = the cost of preparing a print-tape or appropriately-formatted COM tape utilizing one of the methodologies described...
- L = report length, expressed as the number of frames on film or fiche;
- C = the cost per frame to create COM master film or fiche, adjusted to reflect additional charges for incomplete rolls or fiche ...;
- D = the number of required duplicates, typically expressed as the number of frames for roll microform applications or the number of fiche;
- F = the cost per frame for duplicate roll microforms or the cost per duplicate fiche;
- U = the update frequency, expressed as the number of times the COM report will be produced per month;
- R = the cost per reader or other display device;
- N = the number of use points to which the COM report will be distributed;
- A = the amortization period for readers or other display devices, expressed in number of months of useful life; if monthly rental or lease charges are substituted for R, division by the amortization period is omitted;
- M = the monthly equipment maintenance allowance or cost per month of maintenance contracts.[2]

NOTES

[1]M. King, "On Costing Alternative Patterns for COM-fiche Catalogues," Program 14 (October 1980):147-160.

[2]William Saffady, Computer-Output Microfilm: Its Library Applications (Chicago: American Library Association, 1978), p. 159.